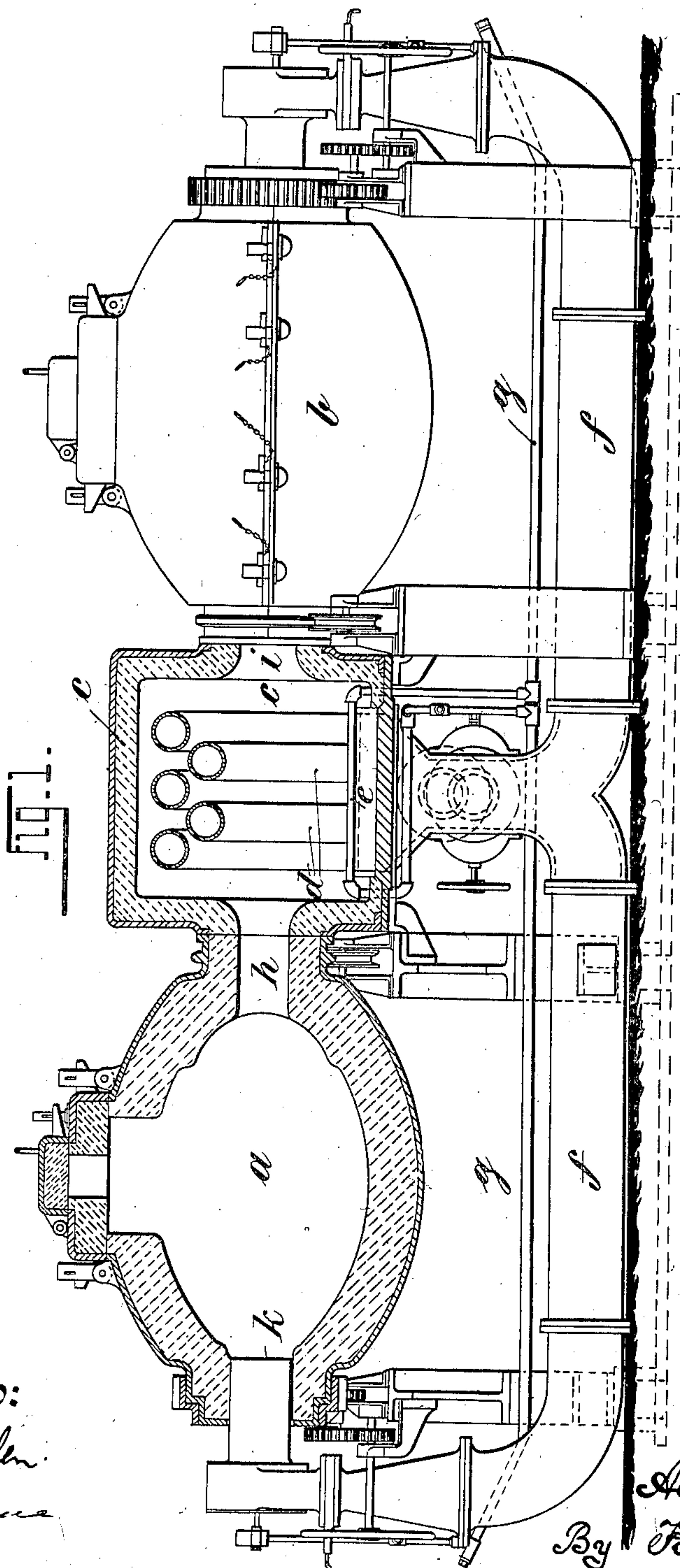


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APPLICATION FILED SEPT. 11, 1907.

Patented Mar. 16, 1909.
3 SHEETS—SHEET 1.



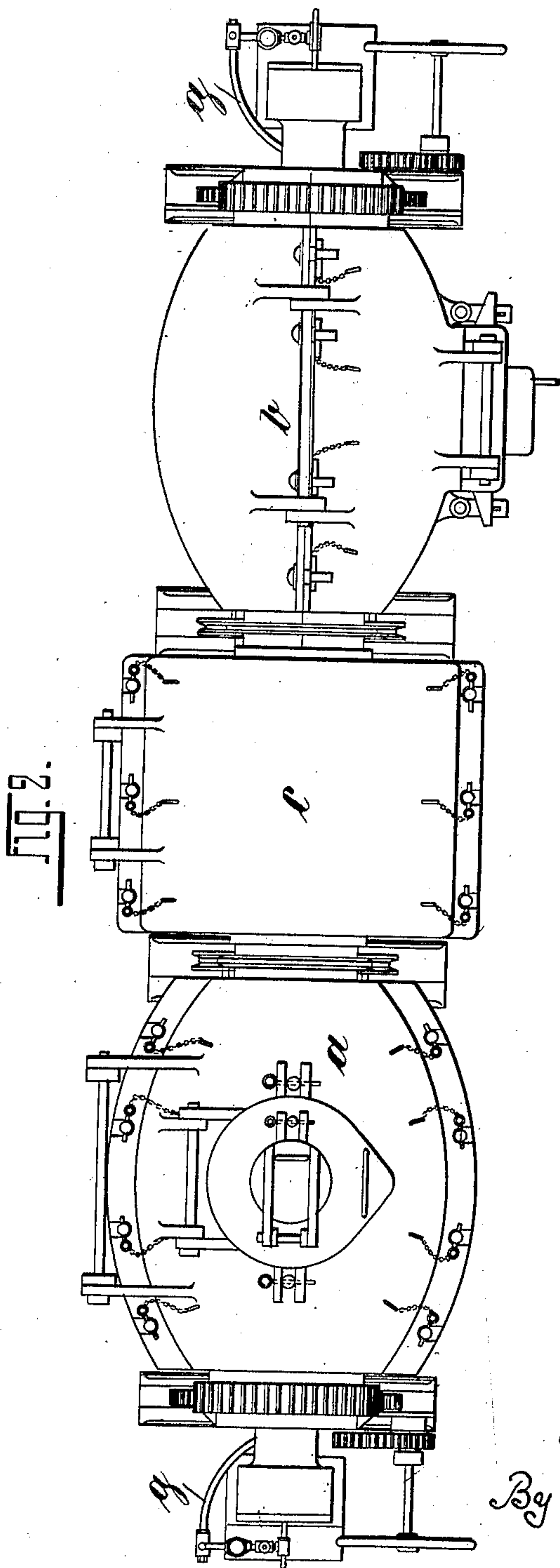
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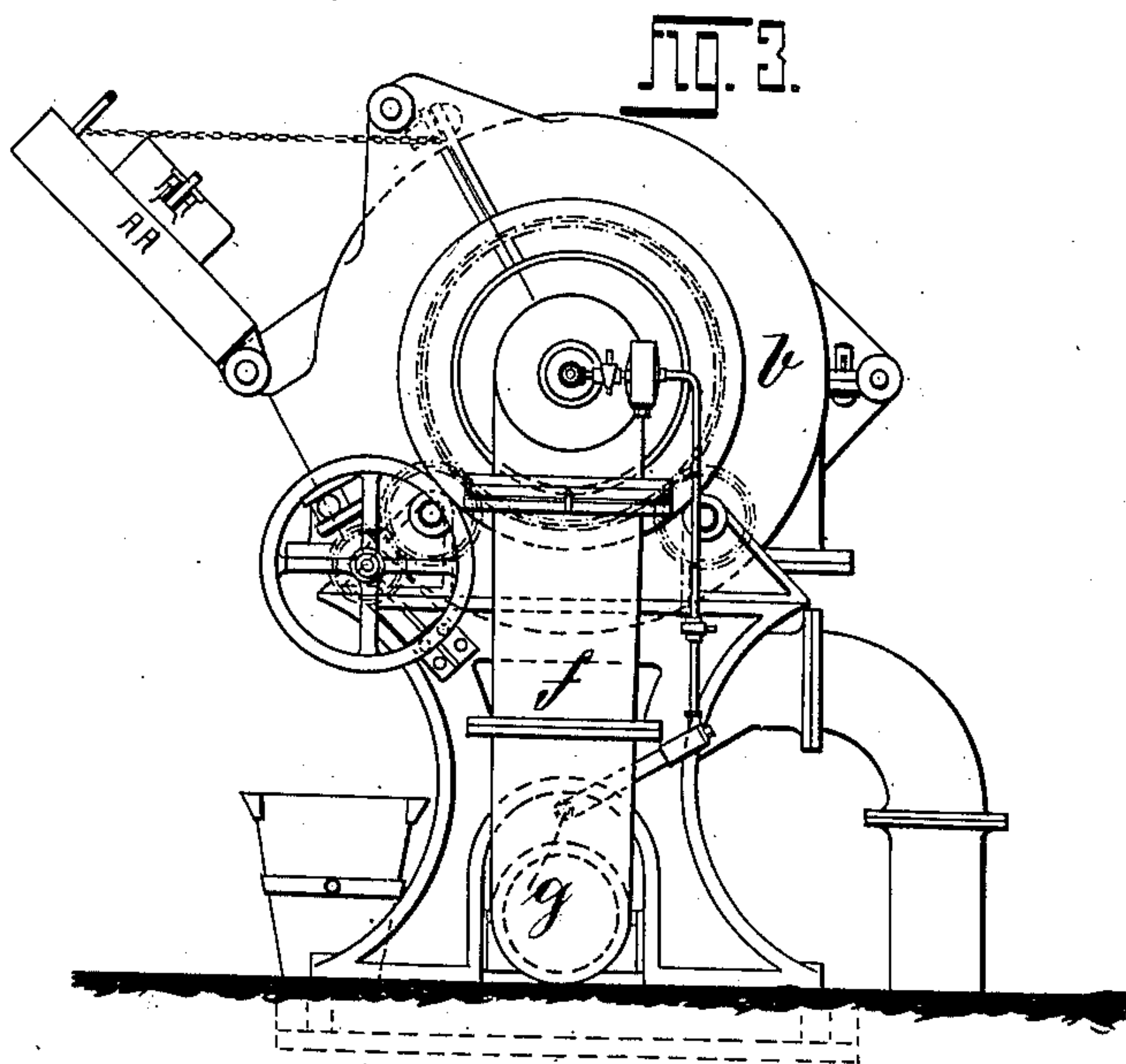
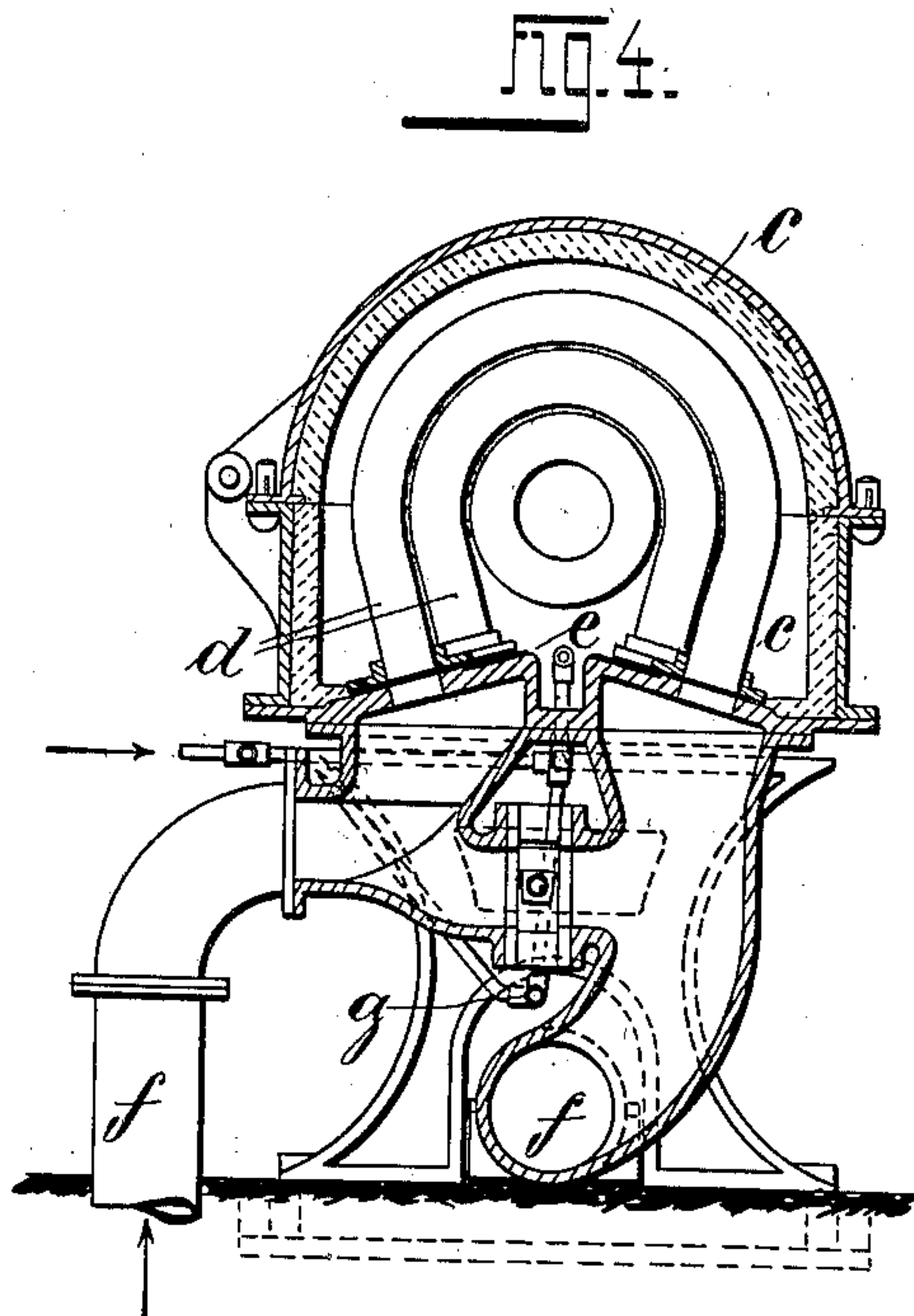
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3 SHEETS—SHEET 3.



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Inventor:
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UNITED STATES PATENT OFFICE.

AUGUST KOCH, OF HANOVER-LIST, GERMANY.

SMELTING-FURNACE.

No. 915,192.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed September 11, 1907. Serial No. 392,500.

To all whom it may concern:

Be it known that I, AUGUST KOCH, manufacturer of machinery, a subject of the Emperor of Germany, residing at Hanover-List, in the Empire of Germany, have invented new and useful Improvements in Smelting-Furnaces, of which the following is a full and clear specification.

My invention relates to smelting furnaces which are heated through oil combustion and in which the exhaust gases from the smelting chamber are used for the oil vaporization, and preliminarily heating the material for the next smelting charge.

The particular features of the present invention are that two alternately operating smelting chambers are used and that the hot exhaust gases are conducted from the smelting chamber in use to the smelting chamber containing the charge for the consecutive smelting, and that these gases before passing into this latter chamber, first pass through the air heating and oil vaporizing chamber.

The advantages of conducting the exhaust gases in this manner is that the air used for combustion enters the smelting chamber at a higher temperature and that the oil is more effectually vaporized, so that far higher smelting temperatures may be obtained and that consequently not only the smelting process is considerably accelerated but the consumption of fuel materially reduced.

A further novel feature is that the air-heating and oil vaporizing chamber can be arranged not inside the furnace only, but also between two or more smelting furnaces arranged so as to be stationary, to rotate or to be tilted.

In the accompanying drawing the furnace is illustrated in Figure 1 in front elevation, partially in section through a smelting chamber, in Fig. 2 in plan, in Fig. 3 in end elevation and in Fig. 4 in transverse section through the oil vaporizing and air-heating chambers.

In the present case the furnace has two smelting chambers *a*, *b* which are suitably arranged one behind the other or adjacently to one another and disposed so that they can be tilted or rotated in order to facilitate the tending thereof.

Between the two smelting chambers the air-heating and oil vaporizing chamber *c* is

arranged in such a manner that in passing from the one smelting-chamber into the other, the hot exhaust gases must first pass through this chamber *c*.

In the chamber *c* the air-heating pipes *d* as well as the oil vaporizing pipe *e* are arranged, which branch off from the main pipes *f* and *g* so that the heating of the air and the vaporizing of the oil for both smelting chambers takes place in the chamber *c*. The hot exhaust gases coming from the smelting-chamber *a* or *b* and flowing through the passage *h* or *i* directly enter the air-heating and oil-vaporizing chamber *c* before passing from the one smelting-chamber into the other and in consequence of their high temperature effect a powerful heating of the air and an intense vaporizing of the oil, so that with reduced consumption of fuel a continuous smelting flame of great power and intensity is obtained at the burner *k*. In this manner considerably higher smelting temperatures can be obtained and the smelting process can be considerably accelerated with the same means. After passing through the chamber *c*, the exhaust gases enter the second smelting-chamber and before issuing therefrom, serve for preliminarily heating the material which is contained therein to be subsequently smelted.

Instead of two smelting-chambers, as in the example illustrated, any desired number of such chambers may be arranged one behind the other or adjacently to one another. The device for tilting or rotating the smelting-chambers may likewise be of any kind preferred.

What I claim is:

1. An oil heated smelting furnace comprising a plurality of chambers adapted to operate alternately as smelting or as preliminary heating chambers, and a fuel vaporizing and air heating compartment, all of said chambers connected with each other and with said compartment to cause the hot gases to pass first through the smelting chamber, then through the heating compartment, and thence through the chamber for heating the material to be subsequently smelted in said chamber.

2. An oil heated smelting furnace comprising a plurality of rotatable chambers adapted to operate alternately as smelting

or as preliminary heating chambers, and a
fuel vaporizing and air heating compart-
ment connecting said smelting and said pre-
liminary heating chambers causing the com-
bustion gases to first pass directly from said
5 smelting chamber into said heating com-
partment, and thence directly to the other
chamber used at the time as preliminary

heating chamber for the material to be sub-
sequently smelted.

In witness whereof I have hereunto set
my hand in the presence of two witnesses.

AUGUST KOCH.

Witnesses:

M. L. THOMPSON,
ROBERT V. BÜLOW.